

SEQUENCE LISTING

<110> BIOPROTEIN TECHNOLOGIES

<120> PREPARATION OF RECOMBINANT ROTAVIRUS PROTEINS IN MILK OF TRANSGENIC NON-HUMAN MAMMALS

<130> D21684

<150> EP 04/290 589

<151> 2004-03-04

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<170> PatentIn version 3.3

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<212> DNA

<213> rotavirus

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<223> VP2 strain RF open reading frame

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<223> VP2 strain RF open reading frame, modified sequence

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<223> VP2 strain RF open reading frame, modified sequence

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and with signal peptide

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cccacagaca	ccatttcaga	ttgcagaaca	gcagatccag	aattttcagg	tggctaattg	1560
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ggtgctgaat	gacaatatta	gaaatggaca	tgtcattat	cagctgatgg	aagctctgtat	1680
gcagctctca	agacagcagt	ttccaacaat	gcctgttgc	tataagaggt	caatccagcg	1740
tggaaattctc	ctcctgtcaa	ataggcttgg	acagctgg	gatctcaactc	ggctgctcgc	1800
ttacaactac	gaaacactca	tggcatgtgt	tacgatgaat	atgcagcatg	ttcagactct	1860
gacaacagaa	aaactgcagc	tcacttcagt	cacatccctc	tgtatgctt	ttggaaatgc	1920
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ttcaaattat	aatgaaagaa	ttaatgatgc	agtggccatt	atcactgcag	ctaataagact	2040
gaatctgtat	cagaaaaaga	tgaaggcaat	tgttgaagat	tttctaaaa	gactgcata	2100
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gctggaaaga	gacgaaatgt	atggctacgt	gaatatcgct	agaaaatctgg	atggattcca	2340
gcagattaac	ctcgaagaac	tcatgagaac	aggcgattat	gcacagatca	ctaacatgt	2400
cctgaataat	cagccagtgg	cgctggttgg	agctttcca	tttggat	acagctcgt	2460
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agttgatacc	ctgaaaccaa	tcctctataa	aattaattca	gatagcaatg	acttttac	2580
cgttgcacac	tatgattggg	tgcctacttc	aaccacaaaa	gtctataagc	aggttccaca	2640
gcagtttgc	ttcagaaatt	ccatgcata	gtgacatca	aatcttactt	tcactgttta	2700
ctcagatctg	cttgcattcg	tgagcggca	tacagtctg	cctatcaatg	cagttgcatt	2760
tgataatatg	cgcattcatg	acgagctgta	agcgccg			2797

<210> 7

<211> 783

<212> DNA

<213> Porcine rotavirus

<220>

<223> VP4 gene for capsid protein, partial cds

<400> 7

aatctttctg	acgaaaattca	agatattgga	tca	gctaagt	cgcaggatgt	tactataaaat	vu
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gactccacaa	ctgtcaagcc	attatttagat	ggtccggacc	aaccaaccac	tttcaaccca	180	
ccaacaagct	attggatatt	acttgcgcca	actgttagagg	gcgtaattat	ccaaggaaca	240	
aacaatatcg	atagatgggt	ggctactata	ctaattgaac	caaacgtgca	agcaactaat	300	
agaatataca	atccctttgg	tcagcaagaa	actttatcg	ttgaaaatac	ataccagaca	360	
caatggacgt	tcatttgtt	aagtaaaact	acactagctg	gaagttatac	acagcatgga	420	
ctattgctct	ctacacccaaa	ctcatacgct	gtaatggat	tcagcggtag	aatatataca	480	
tataatggaa	ccacgccaaa	cgcagcaaca	ggatactatt	cagctactga	ctatgacaca	540	
gtaaaatata	catcattttt	tgactttac	attataccaa	gaaatcaaga	agaaaaatgt	600	
actgagtata	tcaatcacgg	attacctccc	atacaaaaata	cgaggaatgt	tgtgcagta	660	
tccttatcgg	ctagagagat	agtgcacaca	agagctcaag	ttaatgaaga	tattttgtt	720	
tcaaaaactt	cactttggaa	agaaaatgca	tataacagag	acataaccat	aagattcaat	780	
ttt						783	

<210> 8
<211> 799
<212> DNA
<213> Human rotavirus

<220>
<223> P1B VP4 gene, partial cds

<400> 8	
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aaaatgtAAC gataaatCCA ggtccatTTG cacagactAG atatgctCCa gttaaTTGGG	120
gacatggggA gattaatgtAT tcaactatag tggaaccAGt ttttagatggT ccttatcaAC	180
ccactacgtt caaacccACt aatgatttt ggctacttat tagctcaaAt acagatggAG	240
tagtttatGA aagtacAAAt aatagtGACT tttggacAGC agttatcgCT gttgaaccAC	300
atgttagtCA aacAAatAGA caatataTTT tatttggta AAATAAGCAG tttAAatATAG	360
aaaataattC agataAAatGG aaatTTTCG aaatgttCAA aggttagtAGT cagggtGAAT	420
tttctaataG acgAAactCTA acttctAAAt atagactCGT aggaatgCTA aaatatggTG	480
gaaaagtATG gacatttCAT ggtgaaACGC caagagCCAC tactgatAGG tcagataCTG	540
cggatttaAA taatataATCA attataATTc attcagAGtT ttatATCATT ccaagatCTC	600
aagaatCTAA atgtAAatGAG tatattaATA atggTTGCC accaattCAg aataactAGGA	660
acgttagtTCC attatCTCTA tcatCCAGAT ctattCAATA taggagAGCA caagttAAATG	720
aagatattAC aatttcaAAA acttcattAT ggaaggAAAt gcaatgtAAt agagatattA	780
taataaAgatt taaatttGg	799

<210> 9
<211> 875
<212> DNA
<213> Human rotavirus

<220>
<223> P3 truncated VP4 protein gene, partial cds

<400>	9							
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aatgaaaattg	gaactaaaaaa	agcaactaac	gttactgtta	atccaggggcc	attcgcacaa			120
acgggatatg	cgcctgtcga	ctggggacat	ggtaattgc	ctgactctac	attagtgc当地			180
ccaactcttg	atggtccata	ccaaacccact	tcacttaatt	tgccagtcga	ttattggatg			240
ttaattgcgc	ctactagaga	agggaaagtt	gctgaaggta	cgaatactac	tgacagatgg			300
ttcgcttgtg	tactagttga	gccaaatgtg	caaaatacac	aaaggcaata	cgtatttagat			360
gggcgaaaatg	tccaaattaca	tgtctcaaac	gattcaagta	cttcgtggaa	atttatatta			420
ttcattaaat	tgacgccccga	cggAACgtac	actcaatact	caaccttgc当地	aacaccgcat			480
aagttatgcg	cgtgaatgaa	aagagataac	agagtatact	ggtatcaagg	aacgacacccg			540
aacgcatcag	agagctatta	cttgacaata	aacaatgaca	acagcaacgt	ttcaagtgac			600
qctqaattcc	atttgatacc	qcaatcgcaq	actqccatgt	gtacacaata	tataaacaat			660

ggtttaccac caattcagaa tacaaggaat attgtaccag taaatattac atcttagacag	120
attaaagaca taagagctca gatgaatgaa gacatagtga tatcaaaaac ttgcgttatgg	780
aaagaaaatgc aataataac agatataatc attagattta aatttgctaa ttcaataatc	840
aatcaggtg ggctaggtt aaatggtcc gaaat	875

<210> 10
<211> 1194
<212> DNA
<213> rotavirus

<220>
<223> VP6 strain RF open reading frame

<400> 10	
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ggcacattat actccaatgt aagtgtatcta attcaacaat ttaatcaaat gataattact	120
atgaatggaa atgagttcca aactggagga attggtatc taccgattag aaatttggaaat	180
tttgattttg gattacttgg aacaactcta ctaaatttag atgctaacta cgtcgaaacg	240
gcccgcaata caatttgatta tttttagat tttttagata atgtatgtat ggacgaaatg	300
gttagagaat cacaagaaa tggaaattgca ccacaatcag attcacttat aaagttatca	360
ggcattaaat ttaaaagaat aaattttgac aattcatcag aatacataga gaactggaaat	420
ttgcaaaata gaagacaaag aacgggtttt acatttcata aaccaaacat ttcccttat	480
tcagcttcat tcacgttcaa cagatcacaa ccggctcatg ataacttgat gggtacgatg	540
tggctcaatg cgggatcaga aattcaggc gctggattcg actactcatg tgcaataaac	600
gcccagctaa atacgcaaca atttgagcat attgtacagc ttcaagggt gttgactaca	660
gctacaataa ctctttacc agatgcagaa agattttagt ttccaagagt gattacttca	720
gctgacggag cgactacatg gtacttcaat ccagtgttcc tttagacaaa taacgttcaa	780
atagagttt tactaaacgg gcagataata aatacttacc aagcaagatt tggaaacgatc	840
atagctagaa attttgatac aatttagattt tcatttcact tgatgagacc accaaatatg	900
acaccagcgg tagcgcgtt atttccaaat ggcgcagccat ttgaacatca cgcaacagta	960
ggactcacgc tttagaattga atctgcagtt tggatcatg tacttgcga cgcaagcgaa	1020
acaatgctag caaatgtgac atctgtttaga caagaatacg cgataccagt tggaccagtt	1080
tttccaccag gtatgaattt gactgattt atcactaact attcaccatc tagagaggat	1140
aacttgcagc gtgtatttac agtggcttcc attagaagca tgcttgtcaa atga	1194

<210> 11
<211> 1194
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence

<400> 11	
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ggcacattat actcccaagt cagtgtatcta attcaacaat ttaatcaaat gataattact	120
atgaatggaa atgagttcca aactggagga attggtatc taccgattag aaatttggaaat	180
tttgattttg gattacttgg aacaactcta ctaaatttag atgctaacta cgtcgaaacg	240
gcccgcaata caatttgatta tttttagat tttttagata atgtatgtat ggacgaaatg	300
gttagagaat cacaagaaa tggaaattgca ccacaatcag attcacttat aaagttatca	360
ggcattaaat ttaaaagaat aaattttgac aattcatcag aatacataga gaactggaaat	420
ttgcaaaata gaagacaaag aacgggtttt acatttcata aaccaaacat ttcccttat	480
tcagcttcat tcacgttcaa cagatcacag ccggctcatg ataacctgat gggtacgatg	540
tggctcaatg cgggatcaga aattcaggc gctggattcg actactcatg tgcaataaac	600
gcccagctaa atacgcaaca atttgagcat attgtacagc ttcaagggt gttgactaca	660
gctacaataa ctctttacc agatgcagaa agattttagt ttccaagagt gattacttca	720
gctgacggag cgactacatg gtacttcaat ccagtgttcc tttagacaaa taacgttcaa	780
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atagctagaa attttgatac aatttagattt tcatttcact tgatgagacc accaaatatg	900

acaccagcgg tagcggcggtt atttccaaat ggcgcaggcat ttgaacatca cgcaacagt	960
ggactcacgc ttagaattga atctgcagg tgtgaatcg tacttgcgaa cgcaagcgaa	1020
acaatgctag caaatgtgac atctgttaga caagaatacg cgataccagt tgaccagg	1080
tttccaccag gtatgaattg gactgatttg atcactaact attcaccatc tagagaggat	1140
aacctgcagc gtgtatttac agtggcttcc attagaagca tgcttgtcaa atga	1194

<210> 12
<211> 1194
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence

<400> 12	
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ggcacattat actccaatgt aagtgtatca attcaacaat ttaatcaaat gataattact	120
atgaatggaa atgagttcca aactggagga attggtaatc taccgattag aaatttggaaat	180
tttgattttg gattacttgg aacaactcta ctaaatttag atgctaacta cgtcgaaacg	240
gcccgcaata caattgatta tttttagat ttttagata atgtatgtat ggacgaaatg	300
gttagagaat cacaagaaaa tggaaattgca ccacaatcg attcacttat aaagttatca	360
ggcattaaat ttaaaagaat aaattttgac cagtcatacg aatacataga gaacttggaaat	420
ttgcaaaaata gaagacaaag aacgggtttt acatttcata aaccaaacat ttccccttat	480
tcaagttcat tcacgttggaa cagatcaca ccggctcatg ataacttgc gggtacgatg	540
tggctcaatg cgggatcaga aattcaggc gctggattcg actactcatg tgcaataaac	600
gcccagctta atacgcaaca atttgagcat attgtacagc ttcaagggtt gttgactaca	660
gctacaataa ctctttacc agatgcagaa agattttagt ttccaagagt gattacttca	720
gctgacggag cgactacatg gtacttcaat ccagtgattc ttagaccaaa taacgttggaa	780
atagagtttc tactaaacgg gcagataata aatacttacc aagcaagatt tgaaacgatc	840
atagctagaa attttgatac aatttagattt tcatttcagt tgatgagacc accaaatatg	900
acaccagcgg tagcggcggtt atttccaaat ggcgcaggcat ttgaacatca cgcaacagt	960
ggactcacgc ttagaattga atctgcagg tgtgaatcg tacttgcgaa cgcaagcgaa	1020
acaatgctag caaatgtgac atctgttaga caagaatacg cgataccagt tgaccagg	1080
tttccaccag gtatgcagtg gactgatttg atcactaact attcaccatc tagagaggat	1140
aacctgcagc gtgtatttac agtggcttcc attagaagca tgcttgtcaa atga	1194

<210> 13
<211> 1194
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence

<400> 13	
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ggcacattat actccaatgt aagtgtatca attcaacaat ttaatcaaat gataattact	120
atgaatggaa atgagttcca aactggagga attggtaatc taccgattag aaatttggaaat	180
tttgattttg gattacttgg aacaactcta ctaaatttag atgctaacta cgtcgaaacg	240
gcccgcaata caattgatta tttttagat ttttagata atgtatgtat ggacgaaatg	300
gttagagaat cacaagaaaa tggaaattgca ccacaatcg attcacttat aaagttatca	360
ggcattaaat ttaaaagaat aaattttgac aattcatcg aatacataga gaacttggaaat	420
ttgcaaaaata gaagacaaag aacgggtttt acatttcata aaccaaacat ttccccttat	480
tcaagttcat tcacgttggaa cagatcaca ccggctcatg ataacttgc gggtacgatg	540
tggctcaatg cgggatcaga aattcaggc gctggattcg actactcatg tgcaataaac	600
gcccagctta atacgcaaca atttgagcat attgtacagc ttcaagggtt gttgactaca	660
gctacaataa ctctttacc agatgcagaa agattttagt ttccaagagt gattacttca	720
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atagagtttc tactaaacgg gcagataata aatacttacc aagcaagatt tgaaacgatc	840

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acaccagcgg tagcggcggtt atttccaaat gcgcagccat ttgaacatca cgcaacagta	960
ggactcacgc ttagaattga atctgcagg tttgaatcag tacttgcgcga cgcaagcgaa	1020
acaatgttag cacaagtgcac atctgttaga caagaatacg cgataccagt tgaccagg	1080
tttccaccag gtatgaattg gactgatttgc atcactaact attcaccatc tagagaggat	1140
aacttgcagc gtgtatttac agtggcttcc attagaagca tgcttgtcaa atga	1194

<210> 14
<211> 1194
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence

<400> 14	60
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ggcacattat actcccaagt cagtgtatca attcaacaat ttaatcaaata gataattact	180
atgaatggaa atgagttcca aactggagga attggtaatc taccgatttag aaatttggaaat	240
tttgattttg gattacttgg aacaactcta cttaaatttag atgctaacta cgtcgaaacg	300
gcccgcaata caattgatta tttttagat tttttagata atgtatgtat ggacgaaatg	360
gttagagaat cacaagaaaa tggaaattgca ccacaatcag attcacttat aaagtttatca	420
ggcattaaat ttaaaagaat aaattttgac cagtcattcag aatacataga gaacttggaaat	480
ttgcaaaaata gaagacaaaag aacgggtttt acatttcata aaccaaacat ttcccttat	540
tcaagttcat tcacgttggaa cagatcacag cccgctcatg ataacctgtat gggtacgtat	600
tggctcaatg cgggatcaga aatttcaggatc gctggattcg actactcatg tcaataaaac	660
gcgcagctta atacgcaaca atttgagcat attgtacagc ttcaagggtt gttgactaca	720
gctacaataa ctcttttacc agatgcagaa agatttagtt ttccaaagagt gattacttca	780
gctgacggag cgactacatg gtacttcaat ccagtgttcc ttagaccaaa taacgttggaa	840
atagagtttca tactaaacgg gcagataata aatacttacc aagcaagatt tggaaacgatc	900
atagctagaa attttgatac aatttagattg tcatttcagt tcatgagacc accaaatatg	960
acaccagcgg tagcggcggtt atttccaaat gcgcagccat ttgaacatca cgcaacagta	1020
ggactcacgc ttagaattga atctgcagg tttgaatcag tacttgcgcga cgcaagcgaa	1080
acaatgttag cacaagtgcac atctgttaga caagaatacg cgataccagt tgaccagg	1140
tttccaccag gtatgcaggatg gactgatttgc atcactaact attcaccatc tagagaggat	1194
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<210> 15
<211> 1194
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence

<400> 15	60
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ggcacattat actcccaagt cagtgtatca attcaacaat ttaatcaaata gataattact	180
atgaatggaa atgagttcca aactggagga attggtaatc taccgatttag aaatttggaaat	240
tttgattttg gattacttgg aacaactcta cttaaatttag atgctaacta cgtcgaaacg	300
gcccgcaata caattgatta tttttagat tttttagata atgtatgtat ggacgaaatg	360
gttagagaat cacaagaaaa tggaaattgca ccacaatcag attcacttat aaagtttatca	420
ggcattaaat ttaaaagaat aaattttgac cagtcattcag aatacataga gaacttggaaat	480
ttgcaaaaata gaagacaaaag aacgggtttt acatttcata aaccaaacat ttcccttat	540
tcaagttcat tcacgttggaa cagatcacaa cccgctcatg ataacttgcgtat gggtacgtat	600
tggctcaatg cgggatcaga aatttcaggatc gctggattcg actactcatg tcaataaaac	660
gcgcagctta atacgcaaca atttgagcat attgtacagc ttcaagggtt gttgactaca	720
gctacaataa ctcttttacc agatgcagaa agatttagtt ttccaaagagt gattacttca	

gctgacggag	cgactacatg	gtacttcaat	ccagtgattc	ttagacccaaa	taacgttgaa	780
atagagttc	tactaaacgg	gcagataata	aatacttacc	aagcaagatt	tgaacgatc	840
atagctagaa	atttgatac	aatttagattt	tcatttcagt	tgtgagacc	accaaataatg	900
acaccagcgg	tagcggcggt	atttccaaat	gchgagccat	ttgaacatca	cgaacagta	960
ggactcacgc	ttagaattga	atctgcagtt	tgtgaatcag	tacttgcga	cgaaggcgaa	1020
acaatgttag	cacaagtgc	atctgttaga	caagaatacg	cgataccagt	tgaccagggt	1080
tttccaccag	gtatgcagtg	gactgatttg	atcactaact	attcaccatc	tagagaggat	1140
aacttgcagc	gtgtatttac	agtggcttcc	attagaagca	tgcttgtcaa	atga	1194

<210> 16
<211> 1348
<212> DNA
<213> Artificial sequence

<220>
<223> VP6 strain RF open reading frame, modified sequence,
with signal peptide

<400> 16	60					
gccccggat	cccaaggccc	aactccccga	accactcagg	gtcctgtgga	cagctcacct	120
agccgccatg	gctccaggct	cccgacgtc	cctgctcctg	gctttgccc	tgctctgcct	180
gccctggctt	caggaggctg	gcccgtgt	ggatgtcctg	tactccctct	caaaaactct	240
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tggcaatctc	cccattagaa	atttggaaattt	tgattttgga	ctccttgaa	caactctgct	420
caatctggat	gctaactacg	tcgaaacggc	ccgcaataca	attgattatt	ttgtcgattt	480
tgtggataat	gtctgtatgg	acgaaatgtt	tagagaatca	cagagaaatg	gcattgcacc	540
acagtcagat	tcacttatca	agctctcagg	cattaaattc	aaacgcatta	attttgacca	600
gtcattcagaa	tacatcgaga	acttggaaatct	gcaaaaataga	agacagagaa	cgggattcac	660
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cgctcatgat	aacctgtatgg	gcacgtatgt	gctcaatgct	ggotcagaaa	tccaggtcgc	780
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tgaatcagtc	cttgcgcacg	caagcgaaac	aatgtggca	caagtgacat	ctgttagaca	1260
ggaatacgc	attccagtttgc	gaccagttttt	tccaccagga	atgcagtgg	ctgatctgat	1320
cactaactat	tcaccatcta	gagaggataa	cctccagcgc	gtgtttacag	tggcatccat	1348
tcgcagcatg	tttgtcaaat	gagcgcgc				

<210> 17
<211> 1061
<212> DNA
<213> Human rotavirus

<220>
<223> G9 strain 97CM113 outer capsid protein (VP7)

<400> 17	60					
ggctttaaaaa	gagagaattt	ccgtctggct	agcggttatt	tccttttaat	gtatggtatt	120
gaatatacca	caattctaac	cttctgtata	tcaatagttt	tattgaacta	tatattaaaa	180
tcactaacta	gtgcgtatgg	cttcataatt	tatagtttc	ttttacttat	tgttattgca	240
tcaccttttgc	ttaaaaacaca	aaattatgg	attaatttac	cgatcactgg	ctccatggat	300
acagcatatg	caaatttcac	acagcaagaa	acattttga	cttcaacgct	atgcttatat	360
tatcctacag	aagcgtcaac	tcaaatttgg	gatacggaaat	ggaaggatac	tctgtcccaa	420
ttattcttgc	ctaaagggtg	gccaaactgg	tcaagtctatt	ttaaagaata	caccgatata	

gcttcattct caattgatcc gcaactttat tggattata atgtttagt gatgaagtat	480
gattcaacgt tagagctaga tatgtctgaa tttagtctgatt taattctaaa tgaatggta	540
tgttaacccaa tggatataac atttatattat tattcagcaaa cagatgaagc gaataaatgg	600
atatcgatgg gacagtcttg taccataaaa gtatgtccat tgaatacgc gacttttagga	660
atagggttta ttaccacaaa tacagcgaca tttgaagagg tggctacaag tggaaaattta	720
gtaataaccg atgttgtga tgggtgtgaac cataaacttg atgtgactac aaataacctgt	780
acaatttagga attgtaaagaa gttggggacca agagaaaatg tagcgattat acaagtcgg	840
ggctcagatg tgtagatatacagcgat ccaactactg caccacaaac tgaacgtatg	900
atgcgagtaa attggaagaa atgggtggcaa gtttctata cagtagtata ttatattaat	960
cagattgtgc aagttatgtc caaaagatca cggtcattaa attcagcagc ttttactat	1020
agggtttgat atatcttagt tttagaattgt atgtatgtgac c	1061

<210> 18
<211> 1062
<212> DNA
<213> Human rotavirus

<220>
<223> G9 strain 02-22 capsid protein VP7 gene

<400> 18	
ggctttaaaa gagagaattt ccgtctggct agcggttagc tccttttaat gtatggtatt	60
gaatatacca caattctaac ctttctgata tcaatagttt tattgaacta tatattaaaa	120
tcactaacta gtgcgtatgg ctttataatt tatagatttcc ttttacttat ttttatttgca	180
tcattcttttgc taaaacaca aaattatggaa attaattttac cgatcactgg ctccatggat	240
acagcatatg caaatttcattt acagcaagaa acatttttgat cttcaacgct atgcttataat	300
tatcctacag aagcatcaac tcaaattggaa gatacggat ggaaggatac tctgtcccaa	360
ttattcttgc ctaaagggtg gccaacttggaa tcagtctatt ttaaagaata cactgatatc	420
gcttcattcttcaattgatcc acaactttat ttttgcattata atgtttagt gatgaagtat	480
gattcaacgt tagagctaga tatgtctgaa tttagtctgatt taattctaaa tgaatggta	540
tgttaacccaa tggatataac atttatattat tattcagcaaa cagatgaagc gaataaatgg	600
atatcgatgg gacagtcttg taccataaaa gtatgtccat tgaatacgc gacttttagga	660
atagggttta ttaccacaaa tacagcgaca tttgaagagg tggctacaag tggaaaattta	720
gtaataaccg atgttgtga tgggtgtgaac cataaacttg atgtgactac aaataacctgt	780
acaatttagga attgtaaagaa gttaggacca agagaaaatg tagcgattat acaagtcgg	840
ggctcagatg tgtagatatacagcgat ccaactactg caccacaaac tgaacgtatg	900
atgcgagtaa attggaagaa atgggtggcaa gtttctata cagtagtata ttatattaat	960
cagattgtgc aagttatgtc caaaagatca cggtcattaa attcagcagc ttttactat	1020
agggtttgat atatcttagt tttagaattgt atgtatgtgac ca	1062

<210> 19
<211> 1062
<212> DNA
<213> Human rotavirus

<220>
<223> G3 strain MaCH09004 outer capsid protein (VP7) gene,
complete cds

<400> 19	
ggctttaaaa gagagaattt ccgtctggct agcggttagc tccttttaat gtatggtatt	60
gaatatacca cagtttaac ctttttgcata tcagttatata ttttgcattata cgtactcaaa	120
tccttaacta gaataatggaa ctttattttac tacagatttcc ttttattata agttatatttt	180
tcaccactcc ttaatgcaca aaattatggaa ataaatcttc cgattactgg ctcaatggac	240
acaccatata cgaactcaac gcgagaggaa gtattcctaa ctgcacttt atgtttgtat	300
tacccaaactg aagcagcaac agaaataaaat gataattcat ggaaggatac actttctcag	360
ctatTTTAA tcaaaggatg gccaacaggaa tctattttat ttaaaggatata tactgatatt	420
gcctcgTTT cagtcgatcc acaactgtat tttttttttt aatgggtatt aatggaaat	480
gacgctacac tgcaactggaa catgtccgaa ctagcagatt tttttttttt tgagtggta	540

tgttaatccta	tggatattac	tttgttattat	tatcaacaaa	ctgatgaggc	aa <u>aaaaa</u> lyy	uuu
atttcaatgg	gatcatcttgc	tactataaaag	gtatgtccac	taaatacgca	aacatttagga	660
attgggtgtc	taacaactga	tacaaacacg	tttgaagaag	ttgcaacacgc	tgaaaaatta	720
gtgattactg	acgttgtaga	tggagtcaat	cataaaattga	acgtgacaac	aaacacttgt	780
acgattcga	attgtaaagaa	attaggacca	agggaaaacg	tagcagttat	acaggttaggt	840
ggcccagatg	tgcttgacat	aacagctgat	ccaacgacaa	tgccacaaac	agaaaagaatg	900
atgcgagtga	attgaaagaa	atggtggcaa	gtgtttata	caatagttga	ctacgtgaat	960
caaattgtgc	aagcaatgtc	caaaagatcg	agatcattaa	attctgctgc	attttactac	1020
agagtataga	tatagcttag	attagaattt	tatgatgtga	cc		1062

<210> 20
<211> 981
<212> DNA
<213> Human rotavirus

<220>
<223> G12 VP7 gene for capsid protein, complete cds

<400> 20						
atgtatggta	ttgaatatac	cacaatttta	accttttga	tatcaattgt	tctattaaat	60
tatataattaa	aatcaataac	taatataatg	gactttatca	tatatcggtt	tttactaata	120
gttgggtgtca	tgctgccatt	tattaaagct	caaaaattatg	gaataaaatct	tccaaaataaca	180
ggttcttatgg	ataccgcata	tacaaactcc	acacaacaag	agaattttat	gacttccact	240
ttatgcttat	attatccaag	ttcagtcacg	actgaaataaa	ctgaccggaa	ttggacgaaac	300
acactgtcac	aacttttcat	gactaaagga	tggccgacaa	attccgtctt	cttcaagagt	360
tatgctgata	tagcgtcctt	ctctgttagat	cccgagttat	attgtgatta	caatattgtg	420
tttagtacagt	accaaaattt	attagcgttgc	gatgtctcag	aacttgcgtt	tttaattttt	480
aatgaatgg	tatgtatcc	gatggacgta	acgttgtact	attatacaaca	aacagatgaa	540
gcgaataaaat	ggatatcaat	gggagaatca	tgtacggta	aagtatgtcc	ctttaataacg	600
caaacttttag	gaattggatg	tacaacaacc	gacgtcacaa	catttgaaga	ggttagcaaac	660
gcggaaaaat	tagtaataac	tgacgtcgtg	gatggagtca	atcacaagat	taatattaca	720
atgaatacat	gtactatacg	gaatttgcaaa	aaggtaggac	cgagggaaa	tgttagcaatt	780
atacaagtag	gtgggtctga	cgtcatagac	ataacagcag	atccaaacaac	gatcccacaa	840
actgaaagaa	tgatgcgaat	aaattggaaa	aaatggtggc	aggtgtttt	taccgttagt	900
gattacataa	atcaaatagt	tcaggtatg	tccaaacgat	caagatcact	aaattcagct	960
gctttttact	acagaatttt	g				981

<210> 21
<211> 1062
<212> DNA
<213> Human rotavirus

<220>
<223> G3 strain MaCH09404 outer capsid protein (VP7) gene,
complete cds

<400> 21						
ggctttaaaaa	gagagaattt	ccgtctggct	agcggttagc	tccttttaat	gtatggatt	60
gaatatacca	cagtttaac	ctttttgata	tcagtttat	tgttgaatta	cgtactcaaa	120
tccttaacta	gaataatgg	cttattatt	tacagatttc	ttttaattat	agttatatta	180
tcaccactcc	ttaatgcaca	aaattatgg	ataaaatctc	cgattactgg	ctcaatggac	240
acaccatata	cgaactcaac	gcgagaggaa	gtattcctaa	cttcgacttt	atgtttgtat	300
tacccaactg	aagcagcaac	agaaataaaat	gataattcat	ggaaggatac	actttctcag	360
ctatTTTAA	tcaaaggatg	gccaacagga	tctatttt	ttaaagatta	tactgatatt	420
gcctcgTTT	cagtcgatcc	acaactgtat	tgtgattata	atttggtatt	aatgaaatat	480
gacgctacac	tgcaactgga	catgtccgaa	ctagcagatt	tgttactaa	tgagtggta	540
tgttaatccta	tggatattac	tttgttattat	tatcaacaaa	ctgatgaggc	aaataaaatgg	600
atttcaatgg	gatcatcttgc	tactataaaag	gtatgtccac	taaatacgca	aacatttagga	660

atgggtgtc taacaactga tacaaacacg tttgaagaag ttgcaacacgc tgaaaaa <u>ll</u> a	120
gtgattactg acgtttaga tggagtcaat cataaattga acgtgacaac aaacacttgt	780
acgattagaa attgtaagaa attaggacca agggaaaacg tagcagttat acaggttaggt	840
ggcccgatg tgcttgacat aacagctgat ccaacgacaa tgccacaaac agaaagaatg	900
atgcgagtga attggaagaa atggtgccaa gtgtttata caatagtga ctacgtgaat	960
caaattgtgc aagcaatgtc caaaagatcg agatcattaa attctgctgc attttactac	1020
agagtataga tatagcttag attagaattt tatgatgtga cc	1062

<210> 22
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> HIV epitope

<400> 22

Arg Thr Pro Lys Ile Gln Val
1 5

<210> 23
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> HIV epitope

<400> 23

Glu Leu Asp Lys Trp Ala
1 5